

# Weiwei Qi

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## Education

09/2013-06/2019, Ph.D, University of Chinese Academy of Sciences, China  
Advisor: Prof. Min Ji. Thesis: periodic probability solutions to Fokker-Planck equations.  
09/2009-06/2013, B.S., School of Mathematics and Statistics, Lanzhou University, China.

## Employment

11/2019-8/2023, Postdoctoral fellow, University of Alberta  
Mentor: Prof. Yingfei Yi and Prof. Zhongwei Shen.  
9/2023-present, Research associate, University of Alberta  
Mentor: Prof. Yingfei Yi and Prof. Zhongwei Shen.

## Research Interests

Transient dynamics of stochastic systems  
Stochastic dynamics under external variations  
Stochastic stability and bifurcation  
Collective dynamics of coupled stochastic systems  
Data-driven stochastic dynamical systems

## Honors

Scholarship from the China Scholarship Council, 2017-2019 (worked at the University of Alberta as an exchange student).  
Outstanding Graduate, Lanzhou University, 2013.  
National Scholarship, Lanzhou University, 2010.

## Grants

Participant: NSFC Grant 11571344, 2016-2019, CNY470,000, Principal Investigator: Min Ji.

## Teaching

Spring 2021: Introduction to Differential Equations.

Fall 2021: Calculus III.

Fall 2022: Calculus III.

## Supervision

Help supervise Ph.D candidates Jiatong Sun and Yuanchao Xu, January 2022-present.

Help supervise CSC visiting student Yu Zhu from Nanjing University of Science and Technology, March 2023-present.

## Professional Services

Program assistant: the International Undergraduate Summer Enrichment Program (IUSEP), Edmonton, Canada, 2023

Judge: Faculty of Science Undergraduate Research Symposium at University of Alberta, Edmonton, Canada, August 26th, 2022

External examiner: Student projects for "Yingcai" program at Jilin University (virtual), Changchun, China, 2021

Program assistant: the International Undergraduate Summer Enrichment Program (IUSEP) (virtual), Edmonton, Canada, 2021

Program assistant: the International Undergraduate Summer Enrichment Program (IUSEP), Edmonton, Canada, 2019

Assist the organization of The 6th G. J. Butler Memorial Conference on Differential Equations and Population Biology – in Memory of H. I. Freedman, Edmonton, Canada, July 23-27, 2018

Program assistant: the International Undergraduate Summer Enrichment Program (IUSEP), Edmonton, Canada, 2018

Assist the organization of The 7th International Congress of Chinese Mathematicians (ICCM), Beijing, China, August 6th-11th, 2016

Assist the organization of the Workshop on Stochastic Dynamics, Beijing, China, Aug 6th-9th, 2015

Assist the organization of the Summer School in Stochastic Dynamics, Beijing, China, Aug 1st-4th, 2015

## Journal Refereed

Journal of Dynamics and Differential Equations

Journal of Differential Equations

Acta Mathematica Scientia

## Conferences & Workshops

Invited Speaker (40 min) The 4th International Conference on Dynamics of Differential Equations - in Memory of Jack K. Hale (Hale conference), Fields Institute, Toronto, Canada, August 14-17, 2023

Invited Speaker (30 min) Session on Multiscale Dynamics, Joint Americas XIII and ICMC Summer Meeting on Differential Equations - 2023 Chapter, ICMC, University of São Paulo, São Carlos-SP, Brazil, January 30-February 3, 2023

Invited Speaker (30 min) Special Session on Topics in Mathematical Biology: Theory, Applications and Future Perspectives, 2022 CMS Winter Meeting, Toronto, Canada, December 2-5, 2022

Invited Speaker (30 min) Topics in Multiple Time Scale Dynamics, BIRS, Banff, Alberta, Canada, November 27-December 2, 2022

Invited Speaker (30 min) Oberseminar Dynamics (Virtual), Technical University of Munich, Germany, October 24, 2022

Participant: Third Symposium on Machine Learning and Dynamical Systems, Fields institute, Toronto, Ontario, Canada, September 26-30, 2022

Participant: Summer School in Nonlinear Dynamics for the Life Sciences (CAMBAM-CRM-CREATE) (online), May 30-June 10, 2022

Invited Speaker (40 min): Special Session on Multiscale Dynamics, ICMC Summer Meeting on Differential Equations-2022 Chapter (virtual), ICMC, University of São Paulo, São Carlos-Sp, Brazil, January 31-February 2, 2022

Invited Speaker (40 min): Special Session on Multiscale Dynamics, ICMC Summer Meeting on Differential Equations-2021 Chapter (virtual), ICMC, University of São Paulo, São Carlos-Sp, Brazil, February 1-3, 2021

Participant: Conference on Differential Dynamical Systems – In Memory of the 100th Birthday of Shantao Liao (virtual), Beijing, China, October 24-25, 2020

Participant: Special Session on Modelling Population Dynamics: Applications and Recent Developments, 2019 CMS Winter Meeting, Toronto, Ontario, Canada, December 6-9, 2019

Invited Speaker (40 min): Retreat for Young Researchers in Probability and Areas of Application, BIRS, Banff, Alberta, Canada, September 27-29, 2019

Participant: Retreat for Young Researchers in Stochastics, BIRS, Banff, Alberta, Canada, October 13-14, 2018

Participant: International Conference on Stochastic Partial Differential Equations, Edmonton, Alberta, Canada, September 28-Oct 2, 2018

Contributed Speaker (10 min): PIMS Workshop on stochastic and deterministic modelling with PDEs, Jasper, Alberta, Canada, September 20-23, 2018

Participant: The 6th G. J. Butler Memorial Conference on Differential Equations and Population Biology - in Memory of H. I. Freedman, Edmonton, Alberta, Canada, July 23-27, 2018

Participant: The 7th International Congress of Chinese Mathematicians (ICCM), Beijing, China, August 6-11, 2016

Participant: The 8th International Conference on Stochastic Analysis and Its Applications, Beijing, China, June 13-17, 2016

Participant: 2015 Workshop on stochastic processes and its applications in physics and biology, Beijing, China, December 12-13, 2015

Participant: Workshop on Stochastic Dynamics, Beijing, China, August 6-9, 2015

## Preprints & Publications

### a) Published & Accepted

1. Large deviation principle for quasi-stationary distributions and multiscale dynamics of absorbed singular diffusions.  
*Probability Theory and Related Fields*, accepted. (with Zhongwei Shen and Yingfei Yi)
2. Transient dynamics of absorbed singular diffusions.  
*Journal of Dynamics and Differential Equations* 34 (2022), no.4, 3089-3129. (with Min Ji, Zhongwei Shen and Yingfei Yi)
3. Convergence to periodic probability solutions in Fokker-Planck equations.  
*SIAM Journal on Mathematical Analysis*, 53 (2021), no. 2, 1958–1992. (with Min Ji, Zhongwei Shen and Yingfei Yi)
4. Towards mesoscopic ergodic theory.  
*Science China Mathematics*, 63 (2020) no. 9, 1853–1876. Special issue in memory of Professor Shantao Liao. (with Zhongwei Shen, Shirou Wang and Yingfei Yi)
5. Noise-vanishing concentration and limit behaviors of periodic probability solutions.  
*Differential Integral Equations*, 33 (2020), no. 5–6, 273–322. (with Min Ji, Zhongwei Shen and Yingfei Yi)
6. Existence of periodic probability solutions to Fokker-Planck equations with applications.  
*Journal of Functional Analysis*, 277 (2019) 108281, 41pp. (with Min Ji, Zhongwei Shen and Yingfei Yi)

### b) Submitted

1. Population dynamics under demographic and environmental noises.  
Under minor revision at *Annals of Applied Probability*. (with Alex Hening, Zhongwei Shen and Yingfei Yi)
2. Quasi-stationary distributions of absorbed singular diffusion processes in higher dimensions.  
(with Alex Hening, Zhongwei Shen and Yingfei Yi)
3. Stochastic stability of conservative systems on manifolds.  
(with Zhongwei Shen and Yingfei Yi)

### c) Preprints & In preparation

1. Tightness and concentration of quasi-stationary distributions for multi-dimensional absorbed singular diffusions.
2. Large deviation principle for stationary distributions and quasi-stationary distributions.  
(with Chenchen Mou, Zhongwei Shen and Yingfei Yi)